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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,809	11/17/2003	Hugh S. Isaacs	BSA 02-22	4466
26302 7590 03/28/2008 BROOKHAVEN SCIENCE ASSOCIATES/ BROOKHAVEN NATIONAL LABORATORY BLDG. 185 - P.O. BOX 5000 UPTON, NY 11973				
EXAMINER AKHAVANNIK, HADI				
ART UNIT 2624		PAPER NUMBER		
NOTIFICATION DATE 03/28/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ott@bnl.gov  
pacella@bnl.gov  
lnciger@bnl.gov

# Office Action Summary

Application No.

10/713,809

Applicant(s)

ISAACS ET AL.

Examiner

HADI AKHAVANNIK

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/ISD)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s)/Mail Date 11/17/03.

***Claim Objections***

1. Claims 16-17 are objected to because of the following informalities: Please remove the equation number in parenthesis from the claims. Appropriate correction is required.

***Drawings***

2. The drawings are objected to because they are handwritten. Please submit type written drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-7, 13-15, 18, 21, 23-24, 31, 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Stewart (4636850).

Regarding claim 1, Stewart discloses a method of quantifying measurements associated with a subject using a visual image of the subject, the method comprising the steps of: acquiring a digital representation of a first image of the subject, the first image being acquired at a first time, the digital representation of the first image including visual information associated with the first image (see figure 2 and column 4 lines 55-63 which discloses obtaining a first image);

acquiring a digital representation of a second image of the subject, the second image being acquired at a second time, the digital representation of the second image including visual information associated with the second image (see column 4 lines 63-68 which discloses obtaining a second image);

determining difference information, the difference information representing a change in at least one visual parameter between the digital representation of the first image and the digital representation of the second image (see column 5 lines 3-23 which discloses obtaining the difference information);

and converting the difference information into subject information, the subject information representing at least one of a physical change, chemical change, electrical

change, and electrochemical change associated with the subject (column 5 lines 3-43 discloses that the difference information shows the physical differences between the two images).

Regarding claim 4, please see the rejection of claim 4 as it discloses finding the difference between the colors of the first and second (xray with dose) image.

Regarding claim 5-6, Stewart discloses adding an offset and amplifying the difference information (see figure 2 item 70 for offset information and item 72 for amplification, these steps are described in column 6 lines 6-35)

Regarding claim 7, Stewart discloses an A/D converter in column 4 lines 28-35.

Regarding claim 13, Stewart discloses overlaying the images in the rejection of claim 1.

Regarding claim 14-15 Stewart disclose using a color camera and a polychromatic light source in the rejection of claim 1.

Regarding claim 18, please see the rejection of claim 1 as it discloses all aspects of claim 18.

Regarding claims 21, 23-24, please see the rejection of claims 4-6 as they discloses all aspects of claims 21 and 23-24.

Regarding claims 31 and 34-35 please see the rejection of claims 13-15 as it discloses all aspects of claims 31 and 34-35.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 9-10, 19, 27-28, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Hiroi et al. (6898305, referred to as "Hiroi" herein).

Regarding claim 2, Stewart discloses all aspects of claim 2 except for displaying a visual indicator.

Hiroi discloses displaying a visual indicator where difference data shows a physical change which exceeds a threshold (see figure 15 item 1420 which shows defects when the exceed a threshold. These marks represent physical changes).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Stewart a visual indicator as taught by Hiroi. The reason for the combination is because it makes for a more robust system that is able to quickly show the user where the defects are in an image).

Regarding claim 19, please see the rejection of claim 2 above as it discloses all aspects of claim 19.

Regarding claim 9, please see the rejection of claim 2 above as it discloses using a threshold

Regarding claim 10, Stewart discloses 10. A method of quantifying measurements associated with a subject using a visual image of the subject, as defined by claim 9, further comprising the step of substituting a predetermined value for that

portion of the difference information that is not within the region of interest (Stewart discloses using a mask so set the values to a predetermine, same value as before, value in column 5 lines 49-64).

Regarding claims 27-28, please see the rejection of claims 9-10 as it discloses all features of claims 27-28.

Regarding claims 36-37, please see the rejection of claims 1-2 as they disclose all aspects of claim 36-37.

5. Claims 3, 8, 20, 25-26, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Vandermeerssche et al. (5835621, referred to as "Vand" herein).

Stewart discloses all aspects of claim 3 except for finding voltage information, although Stewart does disclose using and voltage information in an analog to digital converter.

Vand discloses determining the voltage information in the abstract and figure 4.

It would have been obvious to include in Stewart the voltage information determining means as taught by Vand. The reason for the combination is to check for defects in an subject by finding resistance and voltage information.

Regarding claim 8, Vand discloses using a potentiostat in column 6 lines 36-55 which discloses the receptor for finding voltage difference.

Regarding claim 20, please see the rejection of claim 3 above as it discloses all aspects of claim 20.

Regarding claims 25-26, please see the rejection of claim 8 above as it discloses all features of claim 25-26.

Regarding claims 32-33 please see figure 1 of Vand as it discloses all aspects of claims 32-33.

6. Claims 11-12, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Doi et al. (5982915, referred to as "Doi" herein).

Regarding claim 11, Stewart discloses all aspects of claim 11 except for using histogram intensity.

Doi discloses histogram analysis in figure 12 and column 10 line 51 to column 11 line 15.

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Stewart the histogram analysis means as taught by Doi. The reason for the combination is because it allows a robust method to find differences between images by comparing their histograms.

Regarding claim 12, Doi discloses a temporal histogram subtraction method in column 11 lines 5-15.

Regarding claims 29-30, please see the rejection of claims 11-12 above as it discloses all features of claims 29-30.

7. Claims 16-17, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable under Stewart in view of Colorimetry (article titled "Basic Colorimetric Concepts" from applicants IDS).



Regarding claim 16, Stewart discloses all features of claim 16 except for the specific colorimetry concepts.

Colorimetry discloses wherein each of the first image and the second image includes at least one pixel, the at least one pixel associated with the first image including a first RGB value, the at least one pixel associated with the second image including a second RGB value, wherein the step of converting difference information further comprises the steps of: converting the first RGB value into a first rgb tristimulus value and converting the second RGB value into a second rgb tristimulus value in accordance with the equations  $r=R/(R+G+B)$  (49)  $g=G/(R+G+B)$  (50)  $b=B/(R+G+B)$  R representing an intensity of red associated with the at least one pixel, G representing an intensity of green associated with the at least one pixel, B representing an intensity of blue associated with the at least one pixel, r representing a red tristimulus value, g representing a green tristimulus value, b representing a blue tristimulus value (see page 121 as it discloses the tristimulus equations);

converting the first rgb tristimulus value into a first spectral power distribution and converting the second rgb tristimulus value into a second spectral power distribution in accordance with the equation  $\text{spectral power distribution} = r \cdot r_g + g \cdot g_g + b \cdot b_g$  r representing a red color matching function, g representing a green color matching function, b representing a blue color matching function, the first spectral power distribution including at least one first spectral power element, the second spectral power distribution including at least one second spectral power element (see pages 121-122, section 3.2.3 as it discloses power distributions);

obtaining an equation representing the subject information as a function of at least one spectral power distribution peak, the at least one spectral power distribution peak being associated with the first spectral power distribution; subtracting the at least one first spectral power element and the at least one second spectral power element to yield a difference spectral power element; and multiplying the difference spectral power element by a derivative of the equation representing the subject information as a function of the at least one spectral power distribution peak to represent the at least one of the physical change, chemical change, electrical change, and electrochemical change associated with the subject (see pages 122-123 as it discloses multiplying by a derivative).

Regarding claim 17, please see the rejection of claim 16 as it discloses all the features of claim 17.

Regarding claim 22, please see the rejection of claim 16 as it discloses RGB values make up pixels.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HADI AKHAVANNIK whose telephone number is (571)272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on 517-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA  
3/17/08

/Brian P. Werner/  
Supervisory Patent Examiner, Art Unit 2624